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DIRECT AND INDIRECT RELATIONSHIPS BETWEEN PARENTAL PERSONALITY AND EXTERNALISING BEHAVIOUR: THE ROLE OF NEGATIVE PARENTING

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Although the impact of parent characteristics and parenting practices on the development of behavioural problems in childhood is often recognised, only a few research programmes have assessed the unique contributions of negative parenting as well as the parent personality characteristics in the same study. Using the Five Factor Model, we examined the extent to which mothers' and father's personality characteristics were related to parenting and children's externalising behaviour in a proportional stratified sample of 599 nonclinical elementary school-aged children. Path analysis indicated that negative parenting practices and parents personality characteristics operate together to predict children's externalising problem behaviour. Consistent with past research (Patterson & Dishion, 1988; Patterson, Reid, & Dishion, 1992), parent personality traits were indirectly related to children's externalising problem behaviour. Their effect was mediated by negative parenting practices. But in addition and in contrast to Patterson's theoretical model, parent personality traits also contributed directly to children's externalising problem behaviour. For the mother data, as well as for the father data, the personality dimensions Emotional Stability and Conscientiousness were negatively and Autonomy was positively related to children's externalising problem behaviours.

Introduction

With regard to personality traits, considerable progress has been made over the past decade toward the development of a more generally accepted taxonomy (Caspi, 1998). The repeated identification of the Big Five factors in personality ratings has led to the view that most personality traits can be described in terms of five broad content domains. The factors of the Five

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Factor Model (FFM) - the Big Five personality factors - have traditionally been numbered and labelled as follows: (I) Extraversion, which describes individuals who are talkative, assertive, and energetic, (II) Agreeableness, describing those who are good-natured, cooperative, and trustful, (III) Conscientiousness, for individuals who tend to be orderly, responsible, and dependable, (IV) Emotional Stability (versus neuroticism), describing a tendency to be not easily distressed, and (V) Openness to experience (or Intellect, Culture), describing people who are imaginative and independent-minded (see Caspi, 1998; Goldberg, 1990). The vast array of research provided in support of the Big Five is quite impressive. The same five factors emerge from factor analyses of comprehensive sets of person descriptive adjectives, nouns and verbs in several languages, with different types of judges, and with different analytic procedures. Initially based on analyses of the personality-trait terms in natural language dictionaries (John, Angleitner, & Ostendorf, 1988), each of the so-called Big Five factors summarises a domain of individual differences that is extremely broad and includes a large number of distinct, more specific personality characteristics. The FFM has proven useful as a framework for organising findings on individual differences in adulthood, in fields as diverse as behavioural genetics (e.g., Loehlin, 1992) and industrial psychology (e.g., Barrick & Mount, 1991). In addition, the Big Five factors were found in clinical person descriptions of children and adults (McCrae, Costa, & Busch, 1986). Moreover, the Big Five model has been extended to person descriptions of children and adolescents (Halverson, Kohnstamm, & Martin, 1994; Shiner & Caspi, 2003), related to early temperament (Caspi, Roberts, & Shiner, 2005; Rothbart & Bates, 1998) and to spontaneous person descriptions by parents of their children (Kohnstamm, Halverson, Mervielde, & Havill, 1998). Because of its ability to predict various domains of functioning across a range of ages, the Big Five model of personality is a good candidate for the study of the direct and indirect relations between parental personality, parental behaviour and problem behaviour in children. The use of the comprehensive Big Five allows to move beyond the relatively well established relations between parental depression (or neuroticism) and parenting (see e.g., Zahn-Waxler, 1995) and to elucidate less understood roles of the other personality traits.

Ecological models of child development

Although parent personality characteristics have a place in most ecological models of child development (Belsky, 1984), the exact nature of that influence is a challenging issue that continues to stimulate controversy (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). In his process model of parenting, Belsky (1984) explicitly proposed that parents'

personalities influence their parenting practices and children's developmental outcomes. However, until now surprisingly little empirical investigations explored systematically which personality characteristics are primarily involved and to what extent these characteristics influence parenting or child development (for a review, see Belsky & Barends, 2002). To date, most research on personality and parenting has been scattershot and has suffered from an inadequate conceptualisation. Developmentalists at times seemed to select from a hodgepodge of available measurement instruments (Belsky & Barends, 2002, p. 434). Moreover, most of the studies focused on specific personality characteristics (e.g., Bosquet & Egeland, 2000) or on parental psychopathology (e.g., Goodman & Gotlib, 1999; Nigg & Hinshaw, 1998) and addressed the parenting of mothers (e.g., Kochanska, Clark, & Goldman, 1997) ignoring the possible impact of fathers' personality characteristics. However, there are few empirical studies detailing the developmental interplay between specific personality characteristics of parents, parenting behaviours and children's problem behaviours (Kochanska et al., 1997). To our knowledge, studies reporting the effects of personality characteristics measured by instruments consistent with the comprehensive Five Factor Model in nonclinical samples are lacking. Parental characteristics may have a direct effect on children's externalising behaviour or may be mediated by the parenting practices (Brook, Zheng, Whiteman, & Brook, 2001).

This study integrated simultaneously negative parenting and parents' personality characteristics. The direct and indirect effects of parents' personality dimensions on externalising problem behaviours in a sample of 599 non-clinical elementary school-aged children were investigated. The focus was on three negative parenting variables defining coercive parental discipline, overreactivity and laxness, which are consistently associated with aggressive or externalising behaviour (O'Leary, Slep, & Reid, 1999; Patterson, 1982; Patterson, Reid, & Dishion, 1992). Based on Belsky's process model (1984), personality characteristics were studied because they influence parenting and through parenting, child development. But in addition, behavioural genetic studies have reported that personality is, in part, heritable (e.g., Jang, McCrae, Angleitner, Riemann, & Livesley, 1998). This means that parent and child characteristics may be linked due to shared genes and biological dispositions above and beyond the influence of negative parenting. In the nature-nurture debate, behaviour genetic studies give an increasing evidence for the complex interplay between parent and child effects (Lytton, 1990; Miles & Carey, 1997).

Relation between Negative Parenting and Childhood Externalising Behaviour

For many years, negative parenting practices have been recognised to be among the most powerful predictors of externalising behaviour in clinical and nonreferred samples (Patterson et al., 1992; Shaw & Bell, 1993). From a social learning perspective, Patterson and his colleagues (Patterson, 1997; Patterson et al., 1992) examined the linkage between parent and child behaviours. Two parallel theories at very different but interrelated levels were built (Patterson, 1997; Snyder, 1995). One theory is based on observations of parent-child interactions and used to explain in detail how parents and children change each other's behaviour over time (Patterson, 1982; Patterson et al., 1992). This theory specifies that early starters begin training for externalising behaviour as young children, as a result of coercive family processes (Patterson, 1982; Patterson et al., 1992). The coercive training the young child receives at home results in massive social-skills and academic deficits. At the core of this coercion model is the idea that externalising behaviours, resulting in benefits for the child by controlling unpleasant interactions (e.g., work demands) or promoting pleasant interactions (e.g., laughter), are more likely to occur in the future (Dishion & Patterson, 1997). As this process continues, the child and the parents progressively escalate in the intensity of their coercive behaviours, often leading to high-amplitude behaviours such as hitting and physical attacks. In this training, the child eventually learns to control his parents through coercive means (Patterson, 1982; Patterson et al., 1992). From this perspective, a child's externalising behaviour is seen as a social adaptation within the immediate micro social environment. The child learns certain social responses through reinforcement, which set the child on a course for either social adaptation or maladaptation. These reinforcing contingencies embedded in social interactions are actually the direct determinants of children's aggression.

The second level consists of a multi-method- and multiagent-defined macromodel that explains in very general terms how coercive interactions at the micro level are affected by broader developmental contexts and outcomes (Patterson et al., 1992; Patterson & Yoerger, 1997; Snyder, 1995). According to this model, the impact of contextual variables such as social disadvantage (Conger, Ge, Elder, Lorenz, & Simons, 1994), divorce (Forgatch, Patterson, & Skinner, 1988), parental stress (Conger, Patterson, & Ge, 1995), parental depression (Bank, Forgatch, Patterson, & Fetrow, 1993), parental personality characteristics (Patterson & Dishion, 1988), and children's characteristics on child adjustment is fully mediated by the impact on parenting practices. However, in contrast to the other contextual variables, the impact of parental and child personality characteristics has not yet been empirically studied.

Relation between Parent Personality, Parenting and Childhood Outcomes

Although parental personality forms a critical part of children's developmental context, surprisingly few investigations have considered the possibility that parents' personalities shape their parenting practices. Moreover, behavioural genetic studies show that some parenting behaviours are heritable (Spinath & O'Connor, 2003). This means that individual differences in parenting behaviours may be related to personality characteristics that are strongly influenced by genetic factors. The strongest evidence for relevant parent traits comes from the developmental parenting literature and implicates emotional instability, conscientiousness and agreeableness (Belsky & Barends, 2002). Maternal neuroticism has been linked to child delinquency (Borduin, Henggeler, & Pruitt, 1985) and more generally to externalising behaviours in children (Bates, Bayles, Bennet, Ridge, & Brown, 1991). Emotional instability connotes difficulty coping under stress. Children with externalising problem behaviour would be expected to create unusual stress on parents, so that a vulnerable parent (with low rank on emotional stability) may more often experience a failing in parenting effectiveness resulting in further escalation of problem behaviours. Conscientiousness implies consistent and planned activities. Parents high on this trait would be expected to provide the consistency and monitoring often lacking in homes of antisocial children (Patterson et al., 1992). Low parent agreeableness might be especially unfortunate in interactions with an aggressive child, leading to more severe coercive and hostile parent-child interchanges (Patterson & Capaldi, 1991).

Aim of this study

The aim of this study was to explore direct and mediating relations among parents' personality characteristics, their negative parenting behaviour and externalising behaviour problems in young children. We studied mothers as well as fathers of a proportional stratified sample of non-clinical school-aged children and we used a well-validated personality instrument appropriate for nonclinical populations.

We hypothesised that parent personality characteristics can be linked to child behaviour problems through relatively direct processes such as genetic transmission, or indirectly, such as by influencing parenting behaviours and parent-child interactions. We expected that the impact of the personality characteristics was mediated partly (not fully) through their impact on dysfunctional parenting practices. In addition and based on the literature, we hypothesised that the Big Five factors Emotional Stability, Conscientiousness and Openness contributed also directly to children's externalising behaviour above and beyond the indirect effects.

Methods

Participants

A sample of regular elementary-schools was randomly selected. Within the schools which agreed to participate, a proportional stratified sample of school-aged children was randomly selected. Strata were constructed according to geographical location (province), sex and age. Parents received an invitation letter to participate in "a study of parenting and child development". All subjects took part voluntarily, and anonymity and confidentiality were guaranteed. The initial sample consisted of 800 families from which 674 (84.3%) responded to the mailed questionnaires with two postal reminders and two telephone calls. Participants were 599 families (92.5% two-parent families) with an elementary school-aged child. Target children in these families ranged in age from 5 to 11 years ($M = 7$ years 10 months, $SD = 1.16$). There were 304 boys ($M = 7$ years 10 months, range: 5 years 9 months – 10 years 10 months, $SD = 1.16$) and 295 girls ($M = 7$ years 10 months, range: 5 years – 10 years 5 months, $SD = 1.16$). From 555 families, both parents provided data. From 39 children only the mother and from 5 children only the father agreed to rate the questionnaires. All parents had the Belgian nationality. The mean age of the mothers was 36 years 11 months (range 27 years 1 month – 52 years, $SD = 3.64$) and of the fathers 39 years (range 27 years 11 months – 61 years 10 months, $SD = 4.26$). Number of children living at home ranged from 1 to 7 (mean 2.4). Percentages of mothers (M) and fathers (F) with various educational levels: elementary school (M: 0.9, F: 3.0), secondary education (M: 41.1, F: 43.3), non-university higher education (M: 45.2, F: 34.4), university (M: 12.8, F: 19.2). Due to missing values the data of 582 mothers and 532 fathers were retained.

Measures

Overreactive and lax parenting

Participants completed the Dutch translation of the Parenting Scale (Arnold, O'Leary, Wolff, & Acker, 1993). The Parenting Scale was originally developed as a parent-report measure of discipline practices of parents of preschool children assessing overreactivity, laxness and verbosity. The scale consisted of 30 items presenting discipline encounters (e.g., "When my child misbehaves...") followed by two options that act as opposite anchor points for a 7-point scale (e.g., "*I do something about it right away*" versus "*I do something about it later*"). The Overreactivity and Laxness factor have adequate test-retest reliability, distinguish clinical from nonclinical samples, and have been validated against behavioural observations of parenting (Arnold et

al., 1993; Locke & Prinz, 2002). To investigate the usefulness of the parenting scale for parents of elementary school age children, an exploratory factor analysis of the translated version was performed. This analysis revealed two interpretable factors corresponding with the Overreactivity and Laxness factors identified in previous studies of the parenting scale (Harvey, Danforth, Ulaszek, & Eberhardt, 2001; Prinzie, Onghena, & Hellinckx, 2005b). With the oblique rotation *promax*, the two factors correlated 0.38. Both factors describe negative parenting at the macro level of Patterson's coercion theory. The Laxness factor contains 11 items and measures the extent to which parents follow through with consistent and suitable consequences for their children's behaviour (e.g., item 16. "*When my child does something I don't like*"... "*I do something about it every time it happens*" versus "*I often let it go*"). The Overreactivity factor contains 9 items and measures a tendency exhibited by parents to respond with anger, frustration, meanness and irritation, impatiently and aversively to problematic behaviour of their children (e.g., item 25. "*When my child misbehaves...*" "*I rarely use bad language or curse*" versus "*I almost always use bad language*"). Cronbach's alphas for the mother sample ($N = 582$) were 0.78 for the new Overreactivity scale and 0.81 for the new Laxness scale. For the father sample ($N = 532$) Cronbach's alphas were 0.77 for the new Overreactivity scale and 0.84 for the new Laxness scale. The correlation between Overreactivity and Laxness scores was $r = 0.36$, $p < 0.001$ in the mother and $r = 0.28$, $p < 0.001$ in the father data. Mother and father Overreactivity and Laxness scores were correlated $r = 0.27$, $p < 0.001$ and $r = 0.22$, $p < 0.001$, respectively.

Further, both parents rated the *Leuvens Instrument voor Coërcief Opvoedingsgedrag* (LICO; Leuven Instrument of Coercive Parenting Behaviour, Hellinckx, Prinzie, Onghena, Ghesquière, Colpin, Grietens, & Hellinckx, 2000). This new self-report questionnaire assesses coercion at the micro level as described by Patterson et al. (1992). When parents are inconsistent and capitulate to the child, Patterson (1976) hypothesised that they enter a "reinforcement trap" where short-term gains (e.g., peace and quiet) are obtained at the cost of strengthening the child's difficult behaviour. This instrument is novel in that it is based on the outcome of whole sequences of conflict rather than on immediate reactions to particular individual behaviours. The LICO contains 10 situations in which the child is confronted with an aversive intrusion of the parents (e.g., "*Clean up toys, go to bed, take a bath*"). For each situation, parents rated at maximum 6 items, i.e., three sequences of actions of the child (e.g., "*When you ask your child to go to bed, how will your child usually act?*") and reactions of the parent (e.g., "*Given that your child acts like that... how do you usually react?*"). The answer categories of the child behaviour range on a continuum from 1 (obey) to 4 (get angry, hit). Parent behaviour ranges from 1 (give in) to 5 (punish severely).

If the child complies during the first or second sequence, parents go on with the next situation. If on the other hand the parents capitulate to the child, a coercion score is calculated taking the duration of the conflict (i.e., the longer the child resists the request, the higher the coercion score) and the intensity of the aversive child behaviour (i.e., the more aversive the child reacts, the higher the coercion score) into account. The total score for coercion is summated over the 10 situations. Cronbach's alphas for the LICO were in the mother and father data 0.88 and 0.91, respectively. Mother and father coercion scores were significantly correlated $r = 0.36$; $p < 0.001$. In the mother data as well as in the father data, the coercion score correlated $r = 0.19$, $p < 0.001$ with the Overreactivity score. In the mother data the coercion score correlated $r = 0.26$, $p < 0.001$ and in the father data $r = 0.22$, $p < 0.001$ with the Laxness score.

The Five Factor Personality Inventory

To measure personality characteristics both parents rated the Five Factor Personality Inventory (FFPI, Hendriks, 1997; Hendriks, Hofstee & De Raad, 1999). The FFPI comprises 100 brief non-dispositional sentence items assessing five broad dimensions of individual differences in personality. The scales are labelled Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Autonomy. Parents rated the items on a five-point scale running from *not at all applicable* to *entirely applicable*. In the normal population, the FFPI scale and factor scores show high internal consistencies, substantial stabilities, and good construct validity (Hendriks, 1997; Hendriks et al., 1999; Hendriks, Perugini, Angleitner, Ostendorf, Johnson, De Fruyt, et al., 2003). Factor weights, established in a large ($N = 2494$) Dutch normative sample (Hendriks, 1997) were used to produce uncorrelated factor scores. The FFPI is available in fourteen languages.

The following domain scales were distinguished with Cronbach's alphas for the mothers and fathers, respectively, between parentheses: (1) Extraversion-Introversion (0.90; 0.91). This scale describes the extent to which the person actively engages the world or avoids intense social experiences. (2) Agreeableness (0.89; 0.89). This scale covers the broad area of prosocial versus antisocial interactions. Agreeable persons are empathic, altruistic, helpful and trusting, whereas antagonistic persons are abrasive, ruthless, manipulative and irritable. (3) Conscientiousness (0.89; 0.89). This scale concerned conscientiousness in work situations. The scale combines a concentrated, planful, reliable, and competent high achievement orientation in work situations with high levels of involvement and perseverance. (4) Emotional Stability (0.90; 0.88). This scale describes the extent to which the person experiences the world as distressing or threatening. (5) Autonomy (0.85; 0.87). A shortcut for Intellectual Autonomy, where emphasis is on the

capability to take independent decisions, not be influenced by social pressures to conform, and maintain an independent opinion (Perugini & Ercolani, 1998). Recently, De Fruyt, McCrae, Szirmak, and Nagy (2004) found that the Autonomy factor is not equivalent to the NEO-PI-R Openness factor. Facet analyses indicated that Autonomy is related to determined self-control and independent decision-making. Openness to Experience corresponds to the lexical Intellect factor, but it is broader, including unconventionality and behavioural flexibility (McCrae & Costa, 1997).

Externalising behaviour problems

Parent's global perceptions of their child's problem behaviours were measured using the Dutch translation of the 113-item Child Behavior Checklist (CBCL; Achenbach, 1991; Verhulst, van der Ende, & Koot, 1996). The Child Behavior Checklist is an extensively validated instrument that has adequate reliability and validity when describing child behaviour (Achenbach, 1991; Vignoe, Bérubé, & Achenbach, 2000). The 33-item externalising scale (comprising delinquent behaviour and aggressive behaviour items) was used in these analyses. The externalising scale is traditionally used in raw score form by summing the score across all items (Achenbach, 1991). Cronbach's alphas for the mother sample was 0.89 and for the father sample 0.86. Of the 582 children in the mother sample, 471 were in the normal range, 44 in the borderline range and 67 in the clinical range. Of the 532 children in the father sample, 458 were in the normal range, 27 in the borderline range and 47 in the clinical range. The correlation between the mother and father scores was significant ($r = 0.69$; $p < 0.001$).

Statistical analyses

We used three approaches to analyse the data. First, we examined the mean, standard deviation, skewness and kurtosis for each variable separately. Second, we examined the bivariate relationships among the parenting, the personality and the problem behaviours measures. Finally, we used path analysis to examine simultaneous multiple and interrelated dependence relations within our hypothesised model. We used LISREL 8.72 (Jöreskog & Sörbom, 2005) for testing the proposed model on our data and to disentangle direct and indirect effects of parent personality characteristics in the established model of children's externalising behaviour. The covariance matrix, computed by using the PRELIS programme, was the basis for all analyses. The statistical estimation method used in the analyses was the Maximum Likelihood method. A model is said to fit the data when the chi-square statistic is non-significant. The goodness-of-fit statistics generated also include several other indicators of how well the model fits the data. In addition to the

chi-square, which is affected by the sample size, a good fit is indicated when the Goodness-of-Fit Index (GFI) approaches 1 and when the root mean square error of approximation (RMSEA) is smaller than 0.05. The expected cross validation index (ECVI) can be used when choosing among alternative models. The ECVI of the chosen model should be smaller than the values for the alternatives (Jöreskog & Sörbom, 1996).

In an initial model, as hypothesised by Patterson et al. (1992) all personality characteristics were fully mediated by the parenting variables. A second model contained, in addition to the indirect effects, also direct effects of parents' personality characteristics. As outlined by Holmbeck (1997), we examined whether the second model provided a significant improvement in fit over the first model. Improvement in fit is assessed with a significance test on the basis of the difference between the two-model chi-squares. Finally, the final model derived from the mother data was tested on the father data.

Results

Preliminary Analyses

Univariate descriptive statistics in both the mother and the father sample revealed that the coercion variable was significantly skewed (2.83; 3.82) and had a kurtosis of 9.87 and 21.53, respectively. To reduce non-normality, a square root transformation was performed (Cohen & Cohen, 1983). After transformation of the coercion variable, absolute values of skewness ranged from 0.01 to 1.67 in both samples and absolute values of kurtosis ranged from 0.02 to 4.21. The means, standard deviations and intercorrelations between the variables are reported in Table 1. With respect to the personality-parenting linkage, Table 1 shows that mothers with low scores on Agreeableness, Conscientiousness, Emotional Stability and Autonomy scored higher on Overreactivity and Laxness. A significant negative correlation was found between Emotional Stability and Coercion. Fathers with low scores on Agreeableness and Conscientiousness scored higher on Overreactivity. With respect to the personality – externalising behaviour problems linkage, lower levels of Conscientiousness and Emotional Stability were related to higher levels of externalising problem behaviours in the mother sample. In the father sample, lower levels of Extraversion and Agreeableness and higher levels of Autonomy were associated with higher levels of externalising problem behaviours. For mothers and for fathers, small but significant correlations were found between the parenting variables. These correlations suggest that the variables were correlated but not redundant.

Table 1.
Pearson Correlations, Mean Scores and Standard Deviations for the Mother Sample (N = 582) and the Father Sample (N = 532).

	1	2	3	4	5	6	7	8	9	10	11	M _{mothers}	SD _{mothers}	M _{fathers}	SD _{fathers}
1. Age	-	-0.01	0.02	0.05	-0.04	-0.02	-0.04	-0.03	0.04	-0.02	-0.09†	7.87	1.16	7.87	1.16
2. Sex ^a	-0.01	-	-0.02	0.02	0.01	-0.05	-0.04	-0.13*	-0.01	0.00	-0.19***				
3. Extraversion	-0.05	0.04	-	-0.07	-0.01	0.07	-0.28***	-0.08	-0.04	-0.07	-0.10†	-0.01	16.10	-0.01	1.06
4. Agreeableness	0.13*	0.03	-0.12*	-	0.10†	0.03	0.00	-0.09†	0.01	-0.04	-0.10†	0.01	19.81	0.00	0.99
5. Conscientiousness	-0.03	0.08†	0.03	0.13*	-	0.12*	0.22***	-0.09†	-0.08	0.03	-0.01	0.00	10.01	0.00	0.97
6. Emot. Stability	0.00	0.04	0.05	-0.05	-0.07	-	0.09†	-0.07	-0.03	-0.04	-0.05	-0.01	18.65	0.01	0.96
7. Autonomy	0.02	0.04	-0.17***	0.11*	0.09†	0.06	-	-0.01	-0.07	0.00	0.11*	0.00	13.42	0.01	1.05
8. Overreactivity	0.01	-0.12*	0.00	-0.24***	-0.11*	-0.29***	-0.20***	-	0.28***	0.19***	0.37***	3.16	0.88	3.15	0.86
9. Laxness	-0.01	-0.06	-0.09†	-0.16**	-0.11*	-0.11*	-0.21***	0.36***	-	0.22***	0.04	2.14	0.64	2.20	0.69
10. Coercion	-0.03	0.03	-0.06	-0.04	-0.05	-0.12*	0.00	0.19***	0.26***	-	0.21***	1.74	1.75	1.79	1.78
11. Externalising	-0.11*	-0.19***	-0.06	-0.06	-0.15**	-0.25***	0.01	0.36***	0.08	0.22***	-	7.38	6.66	6.59	6.19

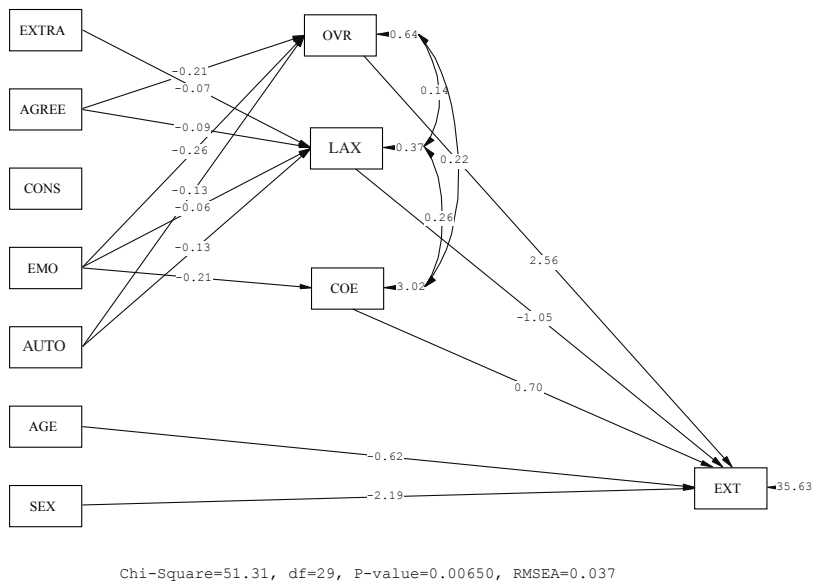
Correlations for the mother sample are below the diagonal; correlations for fathers are above

†: $p < 0.05$ * $p < 0.01$ ** $p < 0.001$ *** $p < 0.0001$

a sex is coded as boys = 1, girls = 2

Figure 1.

Model 2. Indirect effects of mothers' personality characteristics on children's externalising problem behaviours.



EXTRA: Extraversion, AGREE: Agreeableness, CONS: Conscientiousness, EMO-ST: Emotional Stability, AUTO: Autonomy, OVR: Overreactivity, EXT: Externalising. Values represent standardised path coefficients (B)

Table 2.

Fit Statistics for the Basis Model and the Alternative Models.

Model	df	χ^2	p	CFI	GFI	RMSEA	RMSEA ₉₀	SRMR
1: mediating model (basis model)	22	40.51	.01	0.96	0.99	.038	.019 -.057	.028
2: without nonsignificant paths	29	51.31	.01	0.96	0.98	.037	.019 -.053	.037
3: + direct personality effects	24	20.62	.66	1.00	0.99	.0	.0 -.028	.025
4: without nonsignificant paths	26	22.00	.69	1.00	0.99	.0	.0 -.026	.026
5: simultaneous estimation father and mother sample	52	49.41	.58	1.00	0.99	.0	.0 -.025	.029
6: + equality constraints	75	113.62	0.00	0.95	0.98	0.031	.018 -.042	.043
7: final model fathers and mothers	71	74.76	0.36	0.99	0.99	0.010	0 - .027	.034

* Corrected χ^2 for non-normality; GFI = goodness-of-fit index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardised root mean square residual

Results of hypothesis tests using path analyses

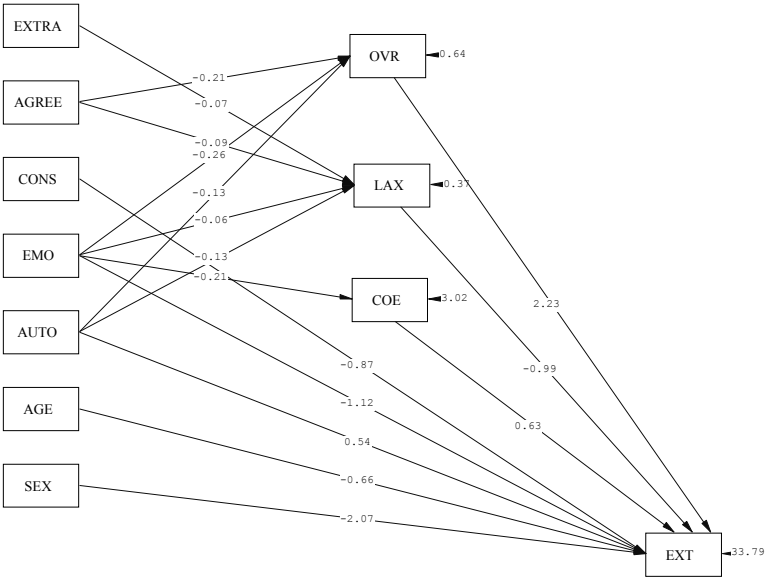
First, Model 1 in which according to Patterson's assumption (Patterson, 1997) the effects of parental personality characteristics on externalising behaviour were fully mediated by the parenting variables, was tested on the mother sample data. Goodness-of-fit statistics (see Table 2) indicated a fairly good fit between the initial model and the mother sample data, $\chi^2 (22, N = 582) = 40.51$, $p = 0.01$. The GFI was 0.99, the RMSEA was 0.038. Although the overall tests indicated a good fit, some of the relations between the variables had non-significant t values, indicating that a more parsimonious model could be found (Jöreskog & Sörbom, 1993). In a trimming process (Kline, 1998), non-significant paths were removed from the model, one at a time, beginning with the path with the smallest t value (Model 2, Figure 1). The paths from Extraversion and Conscientiousness to Overreactivity (Extraversion, $\beta = -0.03$, $t = -0.86$; Conscientiousness, $\beta = -0.06$, $t = -1.77$); from Conscientiousness to Laxness (Conscientiousness, $\beta = -0.04$, $t = -1.74$) and from Extraversion, Agreeableness, Conscientiousness and Autonomy to Coercion had non-significant t -values (Extraversion, $\beta = -0.08$, $t = -1.09$, Agreeableness, $\beta = -0.08$, $t = -1.12$; Conscientiousness $\beta = -0.11$, $t = -1.48$; Autonomy, $\beta = 0.01$, $t = 0.08$) were removed from the model. The chi-square difference with 7 degrees of freedom was non-significant, $\Delta \chi^2_{(7)} = 10.8$, $p = 0.15$. This model explained 19 % of the variance in the externalising behaviour measure.

In Model 3, we investigated the direct effects of Extraversion, Agreeableness, Emotional Stability, Conscientiousness and Autonomy. The paths from Extraversion and from Agreeableness to Externalising had a non-significant t -value (Extraversion, $\beta = -0.26$, $t = -1.07$, Agreeableness, $\beta = 0.12$, $t = 0.47$) and were removed from the model. Goodness-of-fit statistics of the final model (Model 4) indicated a very good fit between the model and the mother sample data, $\chi^2 (26, N = 582) = 22.00$, $p = 0.69$. The GFI was 0.99 and the RMSEA was 0. The chi-square difference with model 2 was significant, $\Delta \chi^2_{(3)} = 29.31$, $p < 0.001$. This model explained 23% of the variance in the externalising behaviour measure and 17%, 9%, 1% of the variance in the Overreactivity, the Laxness and the Coercion measure, respectively. The final model and the results of the path analysis are shown in Figure 2. As expected, above and beyond the parenting variables, Emotional Stability ($\beta = -1.12$, $p < 0.001$) and Conscientiousness ($\beta = -0.87$, $p < 0.001$) had a negative effect on children's externalising behaviour. A positive direct effect was found for Autonomy ($\beta = 0.54$, $p < 0.05$).

Further, a negative effect of age was found, indicating that externalising behaviour problems decreased when children grow up. The significant effect of gender indicated that boys had more externalising problem behaviours than girls. The direct and indirect effects of the personality characteristics are presented in Table 3.

Figure 2.

Model 4. Direct and indirect effects of mothers' personality characteristics on children's externalising problem behaviours. Values represent standardised path coefficients (β).



Chi-Square=22.00, df=26, P-value=0.68874, RMSEA=0.000

EXTRA: Extraversion, AGREE: Agreeableness, CONS: Conscientiousness, EMO-ST: Emotional Stability, AUTO: Autonomy, OVR: Overreactivity, EXT: Externalising.

Table 3.

Standardised Total, Direct, and Indirect effects (β coefficients) of Mothers' Personality Characteristics on Externalising Problem Behaviours in the Final Model.

	Direct Effects	Indirect Effects	Total effects
1. Age	-0.115**		-0.115**
2. Sex	-0.157***		-0.157***
3. Extraversion		0.011	0.011
4. Agreeableness		-0.054***	-0.054***
5. Conscientiousness	-0.128***		-0.128***
6. Emot. Stability	-0.166***	-0.096***	-0.263***
7. Autonomy	0.083*	-0.026**	0.057
8. Overreactivity	0.296***		0.296***
9. Laxness	-0.096*		-0.096*
10. Coercion	0.166***		0.166***

*: $p < 0.05$ **: $p < 0.01$ ***: $p < 0.001$

Finally, we tested if the final model could replicate across the father data. First, a multigroup baseline model was established against which subsequent models that include equality constraints were compared. In Model 5, model specifications describing the final model for the mother sample were similarly specified for the father sample. The goodness-of-fit statistics reflect the simultaneous estimation of the final model for both the mother and the father sample and are presented in Table 2. The GFI value of 0.99, the CFI values of 1.00 and the RMSEA of 0 indicate an adequate fit to the data representing both mothers and fathers. This model was used as the yardstick against which to determine the tenability of the imposed equality constraints. In Model 6, equality constraints were placed on the structural paths across the mother and the father sample. Results from the estimation of this highly restrictive multigroup model yielded a χ^2 value of 113.62 with 75 degrees of freedom. To assess the tenability of these equality constraints, this model was compared with Model 5 in which no constraints were imposed. Accordingly, this comparison yielded a $\Delta \chi^2_{(23)} = 64.21$, which is statistically significant ($p < 0.001$). In a next step, to pinpoint the non-invariant parameters, we inspected modification indices of the parameters for which equality constraints were imposed and relaxed the parameter with the largest modification index that could be substantively interpreted (Kline, 1998). The equality constraint for the path from Emotional Stability to Overreactivity and the variance for Laxness were released. Further a path from Sex to Overreactivity was added. The goodness-of-fit statistics of this model (Model 7) indicated a very acceptable fit. A comparison with Model 5 yielded a $\Delta \chi^2_{(19)} = 25.35$, which is statistically not significant ($p = 0.15$). The significant path from Sex to Overreactivity indicated that in the father sample overreactive interactions occurred more with boys compared to girls.

In summary, our results corroborate on the one hand Patterson's coercion model, but on the other hand they also suggest a modification of his macro-model. Consistent with Patterson's assumption (Patterson, 1997; Patterson & Dishion, 1988), in both the mother and the father data, all relationships between parent personality traits and externalising problem behaviours are mediated by negative parenting practices. But contrary to Patterson's assumption, the influence of parental personality traits on child externalising behaviour problems is not exclusively mediated by parenting practices. Above and beyond the mediating effects, personality traits are also directly associated with externalising problem behaviours in young children.

Discussion

Direct and indirect effects of parent personality traits

In accordance with Patterson's assumption, parent personality traits contributed indirectly to children's externalising behaviour. Only Emotional Stability was negatively related to all of the negative parenting variables. Agreeableness and Autonomy were negatively related to Overreactivity and Laxness, and Extraversion was negatively related to Laxness. These results fit very well with other empirical research. Mothers high on negative emotionality were found to express more negative affects in interactions with their children (Kochanska et al., 1997). Because they are liable to becoming tense and distressed, they are more likely to resort to power assertion. Research has amply documented that maternal anger, sadness, and other negative affect expressed in interactions with children, predicted children's behavioural problems and poor internalisation of parental rules (Belsky, Crnic, & Woodworth, 1995). In addition, mothers' high negative emotionality, linked to excessive self-focus, may impair responsive parenting (Dix, 1991) and thus undermine children's secure attachment, which has been linked to the early experience of sensitive, responsive, affectively positive and supportive care (Ainsworth, 1979). Kochanska et al. (1997) reported also that disagreeableness interfered with adaptive parenting. Mothers with low scores on Agreeableness were more affectively negative and less positive with their children. They used more verbal power, and reported using more power and less responsiveness and warmth. The negative association between Agreeableness and Overreactivity confirms Patterson's clinical impression that hostile interchanges occur more in clinical families compared to nonclinical families. Hostility can be seen as the opposite end of Agreeableness.

In addition, as hypothesised but in contrast to Patterson's macromodel, parent personality contributed also directly to children's behaviour problems. Significantly negative effects were found for Emotional Stability and Conscientiousness. Autonomy was positively related to externalising behaviours. In previous studies Autonomy or Openness was related to sensation seeking (Zuckerman, 1991). According to Frick and colleagues (Frick, Juper, Silverthorn, & Cotter, 1995) sensation seeking contributed to antisocial behaviour. Impulsivity observed as early as age 3 foretells alcohol dependence and criminal behaviour in early adulthood (Caspi, Moffitt, Newman, & Silva, 1996). Parents with low scores on Emotional Stability have difficulties to cope with daily interpersonal stressors. This results in more confrontations and hostile interactions (Gunther, Cohen, & Armeli, 1999). Externalising behaviour in children may be an imitation of these explosive

reactions (Brook, Whiteman, & Zheng, 2002). Another possibility is that children with the same inherited personality characteristics have a propensity to engage in more hostile interactions and are at risk for the development of externalising behaviour problems. Nigg and Hinshaw (1998) reported that higher rates of overt antisocial behaviours in boys with ADHD were associated primarily with maternal characteristics such as higher neuroticism and lower conscientiousness.

Direct effects of parenting practices

Consistent with Patterson's coercion model (Patterson, 1982; Patterson et al. 1992), negative parenting behaviours were directly related to children's externalising problem behaviour in the mother sample as well as in the father sample. High scores on Overreactivity and Coercion were associated with higher levels of externalising behaviour problems. Laxness was negatively related to children's problem behaviours. A possible explanation for the negative association is that permissive or tolerant parents do not perceive some child behaviour as problematic. Of course, these effects do not speak to the mechanisms by which such parenting causes externalising problem behaviour in children. In fact, several mechanisms are possible. Overreactive and coercive parenting behaviour might lead to inconsistent behavioural contingencies, a capricious and unpredictable environment, and a decreased sense of control. This in turn might increase the likelihood of externalising problem behaviours. As described in the coercion theory of Patterson (Patterson et al., 1992), the negative reinforcement of externalising behaviour may increase the frequency and intensity of this problem behaviour. A more direct explanation is offered by Bandura (e.g., Bandura, Ross & Ross, 1963) who showed that children readily imitate the aggressive behaviour of adults. Much overreactive parenting behaviour, such as overt expression of anger, verbal and psychical aggression or arguing has direct parallels among the externalising CBCL-items.

The consistent gender difference in externalising scores is in accordance with other empirical studies (Loeber & Hay, 1997). There is some evidence that boys at all ages are at greater risk for developing externalising behaviour than girls (Sanson, Oberklaid, Pedlow, & Prior, 1991). This relation between gender and aggression has been used as a support for the biological basis of externalising behaviour. A possible explanation is that girls' faster development during early childhood may partially account for the differences on aggression (Halpern, 1992). Fast language development and better self-regulation skills may result in parents finding girls easier to manage, promoting a more positive parent-child relationship and thus having fewer behaviour problems (Sanson, Prior, Smart, & Oberklaid, 1993).

Limitations and Future Directions

Several limitations of the study should be noted. First, the absolute reliance on questionnaire measures, due to the large sample, increases the likelihood of method bias or confound among the measures. Self-reports of parenting were found to correlate only modestly with observer and child reports (Patterson et al., 1992). Therefore, a multi-method measurement strategy (by the inclusion of observational measures) may more accurately assess parenting and children's individual differences and hence further strengthen the results. Further, because this study was rather explorative, it will be necessary to replicate the models in other independent samples.

This study reveals that parent personality characteristics and dysfunctional discipline practices can both be viewed as 'risk factors'. However, other unmeasured parenting behaviours may also have an important influence. In the present study, the focus was on negative parenting. Other research is necessary to test the effects of personality characteristics on positive parenting (gentle, calm, non-power) and children's behaviour (see e.g., Kochanska, Friesenborg, Lange, & Martel, 2004).

A third limitation lies in the cross-sectional design of this study. Parenting practices, personality characteristics and externalising behaviour were assessed concurrently. This precluded inferences about directionality. Future longitudinal research is necessary to compare changes over time in parenting practices and childhood behaviours and to elucidate bidirectional effects.

Finally, in this study, no child personality characteristics were involved. Prinzie, Onghena and Hellinckx (2005a) reported in a longitudinal study that children's agreeableness was negatively related to initial levels of externalising problem behaviour. In addition, higher scores on emotional stability corresponded to larger reductions of externalising problem behaviour over time. Clark, Kochanska and Ready (2000) found significant interactions between parents' personality characteristics and child emotionality in the prediction of parenting behaviours. Child personality characteristics may also moderate the relation between parenting and child externalising (Prinzie, Onghena, Hellinckx, Grietens, Ghesquière, & Colpin, 2003; Van Leeuwen, Mervielde, Braet, & Bosmans, 2004) and internalising problem behaviour (Van Leeuwen et al., 2004).

Future research should focus on processes linking parental personality with the negative parenting practices. Personality may operate through multiple psychological mediators within the parent (Belsky & Barends, 2002). Parents with different personality traits may be more or less prone to positive or negative mood, which in turn influences their parenting (Dix, 1991; Goodman & Gotlib, 1999). Parents' personality traits may also influence their attributions for child behaviour, and feeling efficacious or helpless as a

parent, and this in turn impacts the relationship (Belsky & Barends, 2002). Further, parents' personality may also affect their relationship with each other (Asendorpf & Wilpers, 1998). Many studies have linked the marital relationship with parenting (see e.g., Parke & Buriel, 1998).

Parent personality traits have figured especially in ecological models of parenting or child development but they have seldom been examined in empirical work. This investigation contributes to research on parents' personality, parenting practices and child development. The results indicate that individual differences in parenting behaviours may be related to personality characteristics. The direct and indirect effects illustrate that child behaviour is the result of a complex interplay between parent personality characteristics and parenting behaviour.

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